

CONSCIOUS SEDATION IN DENTAL PRACTICE – A REVIEW

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Abstract:

Sedation in dentistry has been a controversial topic because of its safety. During sedation, the reduction of physiological and psychological responses of the patient to surgery is obtained, without loss of consciousness, collaboration and reflexes. It is treated for moderately anxious patients and allows for a calm and relaxed patient during therapy with amnesia. Sedation required level should be individually adjusted to attain a correct balance between the wants of the patient, the operator and therefore the safety of the procedure. Surgical time is a vital factor for post-operative phases and this might be greatly increased by whether the patient interrupts the surgeon or not. Frequently, the emotional and anxious component makes the treatment difficult. The use of conscious sedation is proved to be winning in the dental practice as it controls these aversions for the dentist. This method, furthermore as being effective has the nice advantage of being safe and of routine use in an ambulatory environment.¹³

Keywords: *Benzodiazepines, ketamine, sedation*

Introduction:

Conscious sedation is a pharmacologically induced state of relaxation in which the patient remains conscious and cooperative throughout dental treatment. This method either eliminates or reduces apprehension, fear, and anxiety to a point where a previously objectionable procedure such as dentistry, becomes acceptable. Protective reflexes remain intact,

cardiorespiratory parameters are stable, and the pain threshold may be elevated¹. The use of sedation for outpatients has been accompanied by problems in assessing the patient's ability.

To function in terms of its own safety and that of others while under the persistent influence of the drugs that he has received², this is one of the disadvantages of administering conscious sedation to dental outpatients. For outpatient surgery, recovery of patients undergoing sedation must be sufficient to allow safe discharge home after the surgical procedure³. Various tests have been used to measure the state of recovery of patients undergoing sedation for outpatient dental surgery, and many researchers have defined "recovery time" as the time until the patient was permitted to return home after the end of dental treatment.

Review:

Conscious sedation, a technique in which the use of drug produces a state of depression of the central nervous system(CNS) but enabling the treatment to be carried out, during which the verbal contact is maintained throughout the sedation⁵. The various drugs and techniques providing conscious sedation for dental treatment should carry a list of safety measures to render loss of consciousness. Conscious sedation maintains the patient's airway independently without any obstruction.

Goals of conscious sedation:⁴

- Promoting patient comfort and safety.
- Quality care is to be ensured.
- Minimize any kind of misbehavior.
- Promote a positive and psychological behavior to the treatment.

Routes of administration: ¹

1. Inhalation: Recommended route for pediatrics.
Efficacy is reduced when patient is having difficulty in breathing through the nose.
2. Oral: Administered by the dentist.
Children who are given an oral sedative should be placed in a quiet room with escort and staff and monitored clinically.
3. Intravenous sedation: It is not recommended in pre-cooperative children.
Single drug like midazolam is recommended for adolescents who are stable.
It should only be administered by an experienced dental sedationist.
4. Rectal: It is not socially acceptable.
It is not recommended with a hospital facility and also requires qualified anesthetist assistance.
5. Intramuscular sedation: This is not recommended.

Criteria for Dental Conscious Sedation

The challenges in dental conscious sedation are as under^{4,5}

- Shared airway between the dentist and the anesthesiologist
- Phobia and anxiety
- Coexisting medical conditions like cardiac anomalies, mental instability and epilepsy
- Chances of arrhythmias during surgery due to trigeminal nerve stimulation
- Enlarged tonsils and adenoids in children likely to precipitate respiratory obstruction
- Risk of patient losing consciousness, respiratory, and cardiovascular depression
- Vasovagal syncope due to the dependent position of legs in dental chair.

The anesthesiologist should be well prepared to face and tackle all the anticipated challenges as enumerated above. A detailed and thorough presentation checkup comprising assessment of airway, cardiorespiratory system, any congenital abnormality, medication history, and allergy must be done⁸. The operating area should be well equipped with all the resuscitation^{6,7} drugs/equipment required to resuscitate the patient in case of emergency.

Indications for Conscious Sedation:¹

- Dental phobia and anxiety
- Traumatic and long dental procedures
- Medical conditions aggravated by stress like angina, asthma and epilepsy
- Children more than 1 year of age
- Mentally challenged individuals
- Ineffective local anaesthesia due to any reason

Sedation and Analgesia Medications ^{1 4 12}

Generic	Adult	Pediatric	Review
Ketamine	IV 0.5-1.0mg/kg IM 4-5mg/kg	>3mo; IV 1-2mg/kg; additional dose 0.5mg/kg IV q 10-15 min prn IM 4-5mg/kg	<ul style="list-style-type: none"> • Risk of laryngospasm with asthma increased; upper respiratory infection; also vomiting occurs. • Not recommended for <3mo.
Midazolam	IV 0.05-0.1mg/kg	IV 0.05-0.1mg/kg IN 0.2-0.3mg/kg	<ul style="list-style-type: none"> • Max dose 2mg, max total dose for >60yo is 0.1mg/kg Decrease dosage by

			33-50% when given with opioid.
Propofol	IV 0.5-1mg/kg; additional dose 0.5mg/kg	IV 1mg/kg; additional dose 0.5mg/kg	<ul style="list-style-type: none"> • Risk of apnea, hypoventilation, rapid changes in sedative depth, hypotension
Ketamine+ Propofol	-	IV ketamine 0.75mg/kg+ propofol 0.75mg/kg Additional doses: ketamine 0.5mg/kg, propofol 0.5-1mg/kg	Ketamine and propofol comments.
Morphine	IV 0.05-0.1mg/kg or 5-10mg/kg	IV 0.1-0.2mg/kg	<ul style="list-style-type: none"> • Monitor mental status, hemodynamics and histamine release. • Requires longer recovery time than fentanyl. • Reduce dosage when combined with benzodiazepines.
Nitrous oxide	-	50% N2O/50% O2 inhaled	<ul style="list-style-type: none"> • Do not use it if acute asthma exacerbation, pneumothorax or head injury is seen.

Conclusion:

The dental profession has at its various techniques and drugs for use in the management of pain, fear and anxiety. Not all techniques are recommended for all patients and all procedures. The education of the dental professional in the use of these techniques and drugs is the primary source of increased safety to the dental patient¹².

The provision of adequate anxiety control is an integral part of dentistry. All patients deserve appropriate anxiety control for any dental procedure that is performed. The application of conscious sedation should be administered effectively in order that it maintains a healthy gap from general anaesthesia and unconsciousness. More concern should be taken when it's applied on pediatric patients. A sedationist must be aptly trained to perform sedations.¹⁴ A high level of

competence based on a solid foundation of theoretical and practical supervised training, progressive updating of skills and continuing experience is the key to safe practice.¹¹

References:

1. Craig DC, Wildsmith JA; Royal College of Anaesthetists, Royal College of Surgeons of England. Conscious sedation for dentistry: An update. *Br Dent J* 2007;203:629-31.
2. Nathan JE. Management of the difficult child: a survey of paediatric dentists use of restraints, sedation and general anesthesia. *ASDC Journal of Dentistry for Children* 1989; 56: 293-301.
3. Committee on Quality Management and Department Administration. Continuum of Depth of Sedation: Definition of General Anaesthesia and levels of Sedation/Analgesia Last Amended; 15 October, 2014.
4. General Dental Council. Maintaining Standards, Guidance to dentists on professional and personal conduct. Publisher City, Country: Publisher, 1997; modified 1998.
5. Roberts GJ, Brook AH, Page J, Davenport ES, British Society of Paediatric Dentistry. A policy document on sedation for paediatric dentistry. *International Journal of Paediatric Dentistry* 1996; 6; 63-66.
6. Guidelines for the elective use of conscious sedation, deep sedation and general anesthesia in pediatric dental patients: Reference manual 1999-2000. *Pediatric Dentistry* 1999; 21: 68-73.
7. Harbuz DK, O Halloran M. Techniques to administer oral, inhalational, and IV sedation in dentistry. *Australas Med J* 2016;9:25-32.
8. Wilson S. Patient monitoring in the conscious sedation of children for dental care. *Current Opinion in Dentistry* 1991; 1: 570-576.
9. Standards of Conscious Sedation in the Provision of Dental Care. The Dental Faculties of the Royal College of Surgeons and the Royal College of Anaesthetists. 2015
10. Binstock W, Rubin R, Bachman C, Kahana M, McDade W, Lynch JP, et al. The effect of premedication with OTFC, with or without, ondansetron, on postoperative agitation, and nausea and vomiting in pediatric ambulatory patients. *Paediatr Anaesth.* 2004;14:759-67.
11. Apfel CC, Korttila K, Abdalla M, Kerger H, Turan A, Vedder I, et al. A factorial trial of six interventions for the prevention of postoperative nausea and vomiting. *N Engl J Med.* 2004; 350:2441-51.
12. Chidambaram V, Costandi A, D'Mello A. Propofol: A review of its role in pediatric anesthesia and sedation. *CNS Drugs.* 2015; 29:543-63.
13. Mamed SF. 4th ed. St. Louis (Mo): Mosby; 2003. Sedation: A Guide to Patient Management; pp. 26-54.
14. Cote CJ, Notterman DA, Karl HW, Weinberg JA, McCloskey C. Adverse sedation events in pediatrics: a critical incident analysis of contributing factors (see comments). *Pediatrics* 2000; 105: 805-814.
15. Dworkin SF, Schubert M, Chen AC, Clark DW. Psychological preparation influences nitrous oxide analgesia: replication of laboratory findings in a clinical setting. *Oral Surgery, Oral Medicine, Oral Pathology* 1986; 61: 108-112.
16. Major E, Winder M, Brook AH, Berman DS. An evaluation of nitrous oxide in the dental treatment of anxious children. An physiological and clinical study. *British Dental Journal* 1981; 151: 186-191.